

amateur radio

JOURNAL OF THE WIRELESS INSTITUTE OF AUSTRALIA

APRIL, 1973

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HAM

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COVER

This close-up photograph of the discone antenna built by Tom Moffat, VK3AQV, clearly shows the high standard of workmanship employed.

See article on page 3.

At the Federal Convention held at Easter 1969, I was asked to accept the position of Federal President. I did so with considerable trepidation, far more trepidation than I believe I have ever admitted in public. That was four years ago. In these last four years there has been far greater change in our Federal body than I for one anticipated.

This issue of Amateur Radio marks yet another stage in our development. For the first time since 1948 this issue is not being printed by the Richmond Chronicle. Because of indifferent health our great friend Ron Higginbotham, VK3RN will be unable to devote, in the future, the time he has devoted to the preparation of the magazine in the past. We leave the Richmond Chronicle on the best of possible terms. We leave them grateful for all they have done in the past and with an awareness of the great deal we owe, in particular, to Ron.

This issue is printed for the first time by Research Publications Pty. Ltd. We believe that the facilities of this printer will enable us to continue to improve the magazine. Over the months ahead the Publications Committee hopes to take advantage of these facilities, and I am sure, you will find improvements gradually introduced. The Executive is advised by the Publications Committee that this change is in the financial and long term interests of the Institute.

This then is the first QSP to be published with this magazine being printed by a new organisation. It is also the last QSP that I shall be writing as Federal President. I have advised the Federal Council of my decision that I

will be unavailable for re-appointment to the Executive at this month's Easter Federal Convention. I have reached this decision with considerable regret, but I believe that my other commitments, particularly in relation to my work, have now made it impossible for me to devote the time that is necessary to perform the functions of President — at least to my own satisfaction.

I see the immediate future as a period of consolidating the various changes that we have adopted and also a period of some re-appraisal. I believe, however, that given good will, and an acceptance on the part of all of us of the responsibilities that must go with an expanding and influential organisation, the future is bright indeed.

Of all the things that I have attempted to do over the past four years I have regarded the most important as the task of bringing the Executive into contact with as many members in each Division as possible. To this end I have travelled widely and I imagine that I have met more amateurs in more places than most of my predecessors. I hope that I have succeeded in this task to some small extent. The interest and friendliness with which I have been met is something that I would wish to acknowledge.

I am tempted, in this my final QSP, to offer some comment which, one might hope, may contain some grain of wisdom or truth. Putting this temptation aside, all I wish to say is, thank you for the opportunity you have given me to take some part in the affairs of amateur radio in

Australia. I have regarded this as a privilege.

Michael J. Owen, VK3KI.

Federal President.

CHANGE OF PRINTER

Have you noticed that A.R. is late this month? That the magazine looks somewhat different? Perhaps some of the print seems smaller than usual? Stay with us. Minor problems, due to the change of printers, will be overcome in future issues.

APOLOGIES

Apologies are due to Neil Town, VK3ANK for omitting to give him credit for his article and front cover photograph on "Emergency Operations" in the March issue.

W.I.A. LOG BOOKS.

These are available from your Division or from the W.I.A. Victorian Division, P.O. Box 36, East Melbourne, Vic 3002. They are not available from Magazines or through the Executive Office. The price is 90 cents each, postage paid and they are available in vertical or horizontal ruling.

AN AUSTRALIAN REVIEW.

It can hardly be said that wireless telegraphy is either a new industry or a new commercial activity, yet in regarding its growth we cannot but note the fact that it is just at present becoming generally recognised not merely as an indispensable force, but as an industry of very great importance and unbounded potentialities. The Marconigram, March 1912.

SUBSCRIPTION RECEIPTS.

Some members have taken the Executive office to task for not issuing receipts for annual subscriptions. It is repeated for those who missed the message earlier last year — no receipts are issued unless specially requested. Imagine the staff required to write out 4000 to 5000 receipts, quite apart from banking and accounting for each subscription. It is also, of course, modern commercial practice, particularly with treated cheques, that receipts are not issued unless demanded. Acknowledgements that subscriptions have been received are also not issued — 4000 x 7c = \$280.00.

COLOR TV.

TIME-BASE INTERFERENCE.

If you are living urban the noise created by almost any colour TV receiver sets up a racket such as to make weak signal reception on Top Band (160 Mx) almost impossible. Short Wave Mag Jan 73.

24HZ OPERATIONS.

We have just been informed by the Ministry (P. & T.) that in view of the health hazard (due to UHF radiation) no station will be allowed to operate in the new 24,000-24,250 MHz band without first obtaining (their) permission. Short Wave Magazine Editorial Jan 1973.

OSCAR 6

The satellite continues to function admirably. On Orbit 1700 the telemetry channel 6B failed — this measures the 10 m x 2 output power. The reason is unknown as yet, but no effect has been observed on the satellite's performance. By reason of approaching winter-time and the inherent fall in ionospheric activity the downlink signals are expected to improve greatly and utilisation is expected to be reduced. The Project Australia Group reminds readers that reports are most welcome. They use 145.790 MHz FM for their communications if anyone in Melbourne would like to drop in on them.

WHY NO A.R.?

"Dear Sir, Although the fees were paid last year not one copy of the magazine was received. Please rectify." Is it any wonder when the addresses of the letter and the mailing plate do not coincide? There must be a moral in this story, perhaps two morals. One — please write in if your A.R. fails to arrive within a reasonable delay period. Two — please advise address changes remembering that up to two more issues could be sent to your old address before the new mailing plate can enter the system.

MEMBERSHIP MATTERS.

Members are reminded that the Executive of the W.I.A. and the Executive Office are not empowered, and do not in any way, interfere with membership matters. This constitutes notably a Divisional responsibility. The Executive Office merely acts as a central agency to prepare and process subscriptions from data supplied by Divisions and keeps track of address and other changes through the centralised RDP system. It is from the latter that A.R. mailing plates are kept up to date.

MEMBERSHIP CARDS.

Several members in VK have contacted the Executive office for failure to send a membership card immediately on receipt of the member's subscription. Members are reminded that membership cards are entirely a Division matter and any complaints on this subject should be directed to your Divisional office. Indeed all membership matters remain the responsibility of your Division except that address changes should be sent directly to the Executive Office for A.R. mailing purposes.

DX ON OSCAR 6.

ZL1WB reports that many ZL's have now worked KX6 and activity in ZL is increasing. He has been copying RTTY from 4m to 2m time and time again and has not succeeded with a QSO. He's looking for VK6, 8 and 9 to complete worked all VK areas having already worked all ZL areas on phone and C.W. Colin, VK5ZHD has now topped 200 contacts through the satellite.

(Continued on Page 20)

STOP PRESS

Easter Federal Convention Venue
now changed to Melbourne.

THE DISCONE

The do-almost-anything antenna

TOM MOFFATT VK3AQV



ALTHOUGH the discone has been around for a long time, it has not been much used in the amateur service. The discone was first seen during the Second World War, and thousands of them are in use around the world today mainly in aviation and military service. In this article VK3AQV describes an amateur version.

This rather strange looking antenna has the rare distinction of being able to operate efficiently over a ten-to-one frequency range, in all directions at once.

If one is made with a low frequency cut-off of 50 MHz, it will be usable on 52 MHz, 144 MHz, 432 MHz, and possibly on 1296 with some loss of efficiency (although 1296 hasn't yet been tried by the author). The discone has a flattened omni-directional radiation pattern, with vertical polarization. The flattening

means it has a small amount of gain, which averages about 2dB over a ground plane cut for a particular band.

As well as the amateur bands, of course, the discone works well on everything in between.

So when you don't feel like hamming, you can hook the discone up to the appropriate converter and listen to aircraft flying over, or country TV stations, or anything else within its frequency range. And another thing ... with the discone you can spend all your hard earned money on one piece of extra-good, ultra-low-loss coax, instead of running cheaper feedlines to a collection of groundplanes, one for each band.

So much for the good points ... here are a few bad ones. Since the same antenna is used for all VHF bands, you can't listen on six while talking on two.

Another problem involves the rig itself: Its output has to be absolutely clean. Any harmonics, or "wonkies" of any kind will be radiated far and wide by the discone without discrimination. So every transmitter you connect to it should be equipped with a low pass or band pass filter, and be thoroughly checked to ensure its output is perfect. Having said all that we will now try to explain how the discone works.

As you can see from the illustrations, the discone in its basic form consists of a disc on top, with a cone-shaped affair directly beneath it.

The centre of the coax connects to the disc, the braid goes to the cone.

The discone operates as a taper transformer to match the 50 ohm line impedance to 377 ohms, which is regarded as the nominal impedance of free space. Any dipole, groundplane, or beam does the same thing, but only over a narrow band of frequencies. If the frequency goes too high or too low, its terminal impedance changes wildly and it won't work. The discone attacks the problem in a different way. Its impedance varies from 50 ohms at the apex of the cone to a much higher figure at the bottom.

When a wave of a given frequency arrives at the apex via the coax, it travels out along the disc and cone until it reaches a point that represents 377 ohms.

Then it says goodbye to the antenna and heads off into space on its own!

Exactly where the 377 ohm point lies on the cone varies with frequency. High frequencies find it near the bottom.

So you can see that the physical size of the discone has a direct bearing on its lower cut-off frequency. As the frequency is adjusted downward the 377 ohm point eventually falls off the edge of the cone. This is where it stops working. The low frequency cut-off point occurs when the slant height of the cone, dimension B on the drawing, is $\frac{1}{4}$ wavelength.

The upper frequency limit isn't so well defined. If the cone could be made with a sharp point its theoretical high cut-off frequency would be infinity. But it can't be made with a sharp point because the coax connection to the disc has to fit through the top. The best you

can do is make the top diameter of the cone equal to the diameter of the coax, about half an inch.

In practice, as the frequency is raised past about ten times the lower cut-off frequency, the radiation pattern begins displaying some minor lobes in the vertical plane, and the SWR gets worse and worse. But the antenna still works, after a fashion. As for the disc, its diameter isn't terribly critical. It simply provides a sort of 'inverted ground plane' for the cone to work against. The disc diameter is usually specified at 70 per cent of a quarter wavelength at the design lower cut-off frequency.

The angle the cone makes with the disc affects the input impedance of the discone. A 60 degree angle represents 50 ohms. The distance between the cone and the disc also affects the input impedance somewhat. F7 or 50 ohms this distance should be 20 per cent of the top diameter of the cone. Now to summarize the design factors (see drawing). Dimension B, the cone slant height, is $\frac{1}{4}$ wavelength at the lowest desired operating frequency. Dimension A, the disc diameter, is 70 per cent of dimension B.

Dimension C, the cone's top diameter, is as small as you can get it, remembering the coax has to fit through dimension D, the disc to cone distance, is 20 per cent of dimension C.

Let's see how this works out in a practical design: The most useful discone for the VHF

(Continued on Page 5)



THE BARLOW-WADLEY XCR 30 MARK II RECEIVER



A most unusual continuous general coverage from 550 KHz to 30 MHz, portable communications receiver! It uses the Wadley loop principle, the same as in the well known DELTAHET and RACAL receivers. A genuine crystal controlled receiver with negligible drift over the entire frequency range. For test details reference is made to a review in the RSGB Bulletin Radio Communications for January 1973 pages 28 to 30.

Specifications:

Frequency Coverage : 500 KHz to 30 MHz continuous.
Frequency Scale Accuracy : Within 5 KHz at all frequencies.
Resetting Accuracy : Within 1 KHz at all frequencies.
Modes of Reception : A.M., L.S.B., U.S.B., and C.W.
Selectivity : 6 KHz overall RF on A.M.
Audio Output : 3 KHz overall RF on S.S.B. and C.W.
Frequency Stability : 0.5 watt (150 Hz to 3 KHz).
External phone socket provided (8 ohm min.).
Will hold an A.M. transmission in tune indefinitely.
Will hold an S.S.B. transmission on pitch for long periods of time.

Sensitivity : Antenna circuit thermal noise audible at all frequencies.
Image Rejection : 90 dB on all movable image channels.
Antenna : 60 dB and better on immovable.
Power Supply : Self contained whip antenna.
Current Consumption : External open wire socket and earth.
Weight : 6 type "D" (11.5v) dry cells (8 volts).
Dimensions : External power socket provided for 6 to 12 volts with internal regulation.
20 mA quiescent.
4.14 Kg. (including batteries) (9 lbs. 2 ozs.)
292 (w) x 190 (h) x 98 (d) mm. (11 1/2" x 7 1/2" x 3 7/8")

XCR 30 Mark II soon available for \$225 net, sales tax included.

International monetary upheavals continue and all following prices of imported material are subject to changes, mostly upwards!

**YAESU MUSEN transceivers FT-101 \$660, FT-DX-560 \$525.
FT-200 with FP-200 power supply \$450.**

HY-GAIN ANTENNAS

TH3JP Junior Triband Beam, three elements, now only \$100
TH6DA.. Master Triband Beam, six elements, only \$175
14AVD/WB 10-40 mx Vertical, self supporting .. only \$45
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TUBES

6KD6 or 6JS6, \$5.00 each; 6HF5 or 6LQ6, \$6.00 each.

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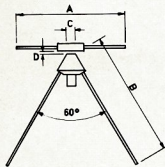
Phone Springwood (STD 047) 511-636

amateur would be a 52-144-432 model. Just to be on the safe side we'll make the lower cut-off frequency 50 instead of 52 MHz.

The first thing to work out is dimension B, the cone slant height.

By formula an electrical $\frac{1}{4}$ wavelength is $2952/f(\text{MHz})$ so $2952/50$ equals 59 inches for dimension B. Dimension A, the disc diameter, is 70 per cent of dimension B, or 41.3 inches.

Dimension C, the top diameter of the cone, we will make $\frac{1}{2}$ inch so $\frac{1}{2}$ inch coax will match it. Dimension D, the disc to cone distance, is 20 per cent of C, or $1/10$ inch.



ISOMETRIC & SPACE DIAGRAM

CONSTRUCTION TECHNIQUES: As you can see the 50 MHz disc is a monster standing nearly five feet high! If it were made of solid metal sheet the first gust of wind would send it flying into the neighbor's yard!

But there's a solution to that problem. Build it of pieces of tubing arranged to approximate the disc and cone shapes. If at least sixteen tubes are used for each, spaced evenly all

around, the loss of efficiency will be small. And the wind resistance will drop to almost nothing, and the disc is lighter; the one at this shack weighs only $5\frac{1}{4}$ pounds.

You now have to devise some way to hold all the pieces of tubing in their proper positions. The disc at this QTH uses a centre-piece machined out of a solid chunk of $3\frac{1}{4}$ inch diameter aluminium bar. (See detail drawing.) Cut the cone section to a 60 degree cone shape, and drill sixteen holes all around the edge and plug in the tubing.

The dimensions given refer to the distance from the edge of the cone to the apex, and the dull diameter of the disc. Keep this in mind when calculating the length of the tubing pieces. The tubes must be slightly shorter to compensate for the part of the disc and cone represented by the centre-piece.

Once the disc and the cone are made up it's necessary to join them together with some kind of insulator.

A good insulator can be made from one of the various casting resins, remembering it should have good electrical characteristics at VHF and UHF. One that has been used successfully is the pink "goop" they sell in hardware stores to plug holes in mufflers.

Another choice is clear casting resin sold in hobby shops. Ask for the resin used to encapsulate rare coins or dead bugs.

Once the disc is together drill a $\frac{1}{2}$ inch hole from the bottom of the centre-piece right up through central axis until it reaches the disc on top. Use a $\frac{1}{8}$ inch drill to go the rest of the way through the disc.

Now prepare a piece of $\frac{1}{4}$ inch brass welding rod by cutting a $\frac{1}{4}$ inch thread on one end. Solder the other end to a suitable coax connector.

The rod is now run up through the centre of the disc until the coax connector is flush

with the bottom of the centre-piece. Drill and tap the holes and mount the connector, then run a nut on to the top of the brass rod until it is tight against the top of the cone. Be sure to waterproof the nut to prevent corrosion between the brass rod and the aluminium disc.

As you can see the $\frac{1}{4}$ inch rod running through the half inch hole to the top approximates a piece of 50 ohm solid coax. Although it's a lot of trouble, doing it this way should help the disc's high frequency performance. All that's left to do now is find some way to mount the disc on the top of your tower.

At this QTH the centre-piece has a tail machined on the bottom. The tail plugs into a piece of aluminium pipe about $1\frac{1}{4}$ inches in diameter and eight feet long. The coax runs down the centre of the pipe. The pipe is then clamped to the top of the tower with a 'TV mast extension kit' available from TV mast suppliers.

PERFORMANCE OF THE 50 Mhz DISCONE.

First some SWR readings: On 6 metres, $2\frac{1}{2}$ to 1. It sounds a bit high but forget it. It works very nicely.

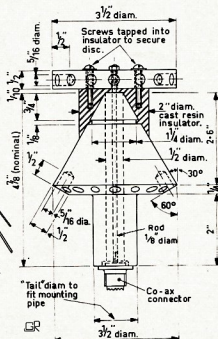
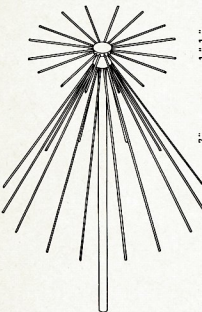
On 2 metres, 1.05 to 1. Obviously its best band. On 432, 2 to 1.

1296 ... not tried yet, as there's been no gear available to test it with.

On-air tests: On six, the discone transmits as well as a folded ground plane, with signals averaging 5 to 6 dB better. This is probably explained by the larger capture area.

On 432, the only test so far has been SWR with a borrowed transmitter. No two way contacts have been made due to a lack of 432 gear at this QTH. But now that the discone is up and operating, 432 operation is definitely on the cards, once some gear is built. At least the 432 antenna is finished!

AP



HUB DETAILS



VHF
COMMUNICATIONS

A PUBLICATION FOR THE RADIO AMATEUR
SPECIALLY COVERING VHF, UHF AND MICROWAVES

This is a West German publication in English for the Radio Amateur especially relating to v.h.f., u.h.f., and microwaves.

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A 30-40 MHz. FREQUENCY COUNTER

THE CONTROL UNIT

The function of the control circuits is, in sequence to open the signal gate for the selected time period, to close it at the end of this time period, to generate buffered strobing pulses for the indicator decades and, finally, to generate a re-set pulse so that the whole cycle can start again.

Fig. 7 gives the waveforms encountered in the control section and their time relationship.

Fig. 4 gives the circuitry of the control section while Fig. 11 gives component layout.

Two 7473 dual JK flip flops are used to generate the various control pulses while three 7400 gates are used as buffer/inverters for the strobe pulses. This latter addition was necessary

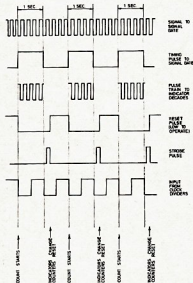


FIG. 7 WAVEFORMS

since the use of more than two indicator decades would overload the strobe output available from the 7473s.

THE COUNTER DECADES

The function of each indicator decade is—in correct time sequence:—

- To accept input pulses and count up to 9 of them.
- To pass on to the next indicator decade a single pulse for each 10th pulse received.
- To store its own "count" as at the end of the counting period.
- At the command of the strobe pulse (see Fig. 7) to pass on to the seven segment incandescent indicator the count stored.

- On receipt of a "clear" pulse from the control section (see Fig. 7) to re-set to zero and be ready for the next input pulse train.

Note that the indicators will continue to show the "count" set up as a result of step (d). This indicated count will remain on display until the next strobe pulse from the next count period causes the next "count" to be sent forward for display. This facility removes the "flickering" of the display which would result if the count was not stored, but passed straight through to the display.

Additional features of the decades described are provision for causing all indicator segments to be displayed on command to check for burnt out segments (lamp test) and provision for non significant zero suppression should this be required. There is also a decimal point display available.

Up to six indicator decades can be used in series to display up to six significant figures. It is recommended that six be used. However, if cost is a real consideration a minimum of three indicator decades can be used by sel-

ection of the appropriate timing pulse. An explanation may assist here.

For a Six Indicator Display

Assume an input frequency of 12.345678 MHz.

If a 1 millisecond (0.001 sec. or 1 k.p.p.s.) gating signal is used, then 12345 pulses will be counted in this period and the display will read 012345 (i.e. 012.345 MHz.).

If the gating period is increased to 1.0 second, then 12345678 pulses will be counted. Since there are only six indicator decades, the "12" part will "spill out" of the left hand side of the display which will thus show "345678" Hz.

For a six-digit display then, it is only necessary to use a 1 second or a 1 millisecond gating time to display the whole of a signal having up to nine significant figures.

For a Three Segment Display

Assume the same 12.345678 MHz. input signal.

A 1 second gate pulse will pass 12345678 pulses forward for display,

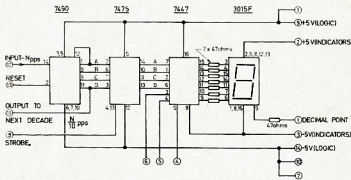


FIG. 6 DECADE COUNTING UNIT

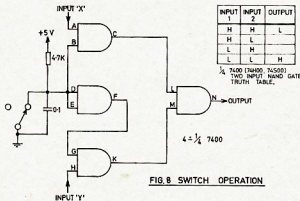


FIG. 8 SWITCH OPERATION

1 DECIMAL POINT

2 +5V INDICATORS ONLY

3 EARTH INDICATORS ONLY

4 BLANKING OUTPUT

5 BLANKING INPUT

6 LAMP TEST

7 EARTH

8 STROBE INPUT

9 +5V

10 EARTH

11 OUTPUT

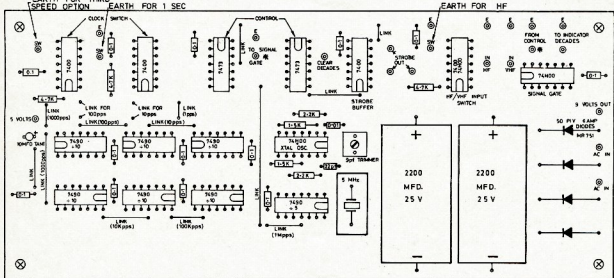
12 INPUT

13 RESET

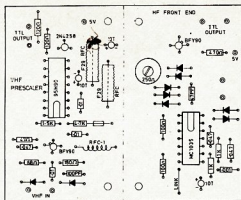
14 CLEAR PAUSE

15 +5V

Output from the bridge is smoothed by two 2,200 μ F. 25 volt electrolytics. The smoothed d.c. is then applied to the paralleled inputs three LM309K (National) regulators. These regulators are rated at 1 amp. and are attached to the back of the instrument cabinet. Output of one LM309K is



Page 7



**COMPONENT LAYOUT
VHF PRESCALER
AND HF. FRONT END**
FIG. 12

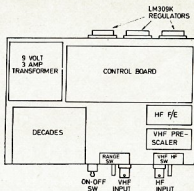


FIG. 13. GENERAL LAYOUT OF MODULES

used to power the control board, the h.f. pre-amplifier and the v.h.f. pre-scaler. Output of the second LM309K is used to supply the incandescent displays, while the third LM309K supplies 5 volts to the logic of the decade indicators.

The writer's initial attempt was to use a separate regulated 5 volt supply, but this approach turned out to be both more expensive and more space consuming than the method finally adopted.

CONSTRUCTION

Three basic printed circuit boards are used plus one for each indicator decade.

- (i) V.h.f. pre-scaler, $2\frac{1}{2}'' \times 1\frac{1}{2}''$.
- (ii) H.f. pre-amplifier, $2\frac{1}{2}'' \times 1\frac{1}{2}''$.
- (iii) Control board, $8'' \times 3\frac{1}{2}''$. Contains crystal oscillators, clock dividers, signal gate, control circuitry, gate switches, rectifier bridge and smoothing capacitors. (See Fig. 11.)
- (iv-ix) Decade divider boards, each $3\frac{1}{2}'' \times 13''$, designed to plug into a Utlux 15-way socket (type H10075).

All parts are contained in a 12" x 4" x 8" deep cabinet. Layout of the parts within the cabinet is shown in Fig. 13. The sockets for the indicator decade boards are mounted on a small bracket which is attached to the front panel so that only the 3015F indicators show through the "window". This window may be covered with tinted perspex.

Interconnection has been kept to a minimum and construction is reduced to being able to put the "chips" into the board the right way round and being able to solder them in without accidental bridging. A fine soldering iron with a 1/8" or 3/16" bit is an essential tool.

CONSTRUCTIONAL SEQUENCE AND TESTING

It is recommended that the power supply and its associated LM309K regulators be first completed. This will provide a power source for subsequent testing.

The crystal oscillator and its divider chain should next be made. This will provide a signal source for testing the

indicator decodes and control functions. The fundamental or harmonics of the 5 MHz oscillator can be picked up on any general purpose receiver at 5 MHz intervals.

If the divider chain is working correctly, a 0-5 volt meter at the 1 p.p.s. output point will give clear indication of on and off or "high" and "low" at each transition.

The indicator decades should next be made. As each one is finished it can be powered with plus and minus 5 volts at the appropriate points (the indicator and logic 5v. supplies can be paralleled for this test).

Earthing the lamp test pin (pin 6, Fig. 10) should cause each segment to light and the indicator to display an "8".

Temporarily earth the re-set pin (pin 13, Fig. 10) and temporarily connect the strobe pin (pin 8, Fig. 10) to +5 volts.

Then apply the 1 p.p.s. second output from the crystal clock chain to the input pin (pin 12, Fig. 10). This should allow the indicator to count 0 through 9 and back to 0 again. A voltmeter between the output pin (pin 11, Fig. 10) and earth should give a pulse on each 10th input pulse.

Finally, complete the assembly and interconnect the various boards, but leaving out the v.h.f. pre-scaler at this stage.

With no signal input, the display should register all zeros.

Apply a signal of no more than 1 volt peak-to-peak at some mid frequency (say, from an audio oscillator set at 40 kHz.). Set the time period

selector to give 1 p.p.s. to the control section (this can be checked by a voltmeter to pin 12 of the 7400 signal gate), and the input switch to select the h.f. pre-amplifier. Next adjust the 250 ohm pot. in the base circuit of the BFY90 on the h.f. pre-amplifier board until there is an indication on the display. Reduce the input from the signal source until the display keeps changing at random.

Re-adjust the 200 ohm pot. until the display is once again locked in. The correct position of the pot. is where it allows the input voltage to be reduced to a minimum and still retain a locked display.

FREQUENCY RESPONSE

Although the various makes of the TTL 74XX series of ICs are interchangeable and do the same things in any given circuit, there is a difference in the maker's rated maximum frequency response.

Fairchild, for their 74XX series only guarantee a 20 MHz. maximum operating frequency. For higher speeds their 74HXX devices are recommended.

National Semiconductor, on the other hand, quote 30 MHz. as the maximum operating frequency of their 74XX series.

In order to extend the frequency range of this counter beyond the nominal 30 MHz. limit, it is necessary to be specific about only three of the devices in the counter. Apart from these three the operating speeds do not exceed 3.5 MHz. and thus any maker's chips can be used.

(Continued on Page 19)

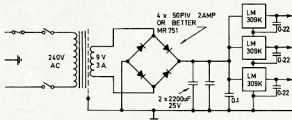


FIG. 14 POWER SUPPLY

Tasmania celebrates its GOLDEN JUBILEE

By the late Lon Jensen, B.Sc.,
Dip. E., M.I.R.E.E. VK7LJ.

Mr. A. Harold Masters, Architect, Electrician and Lecturer in Electrical Engineering at the Launceston Technical College is credited with being the first in Tasmania to demonstrate communication by means of Wireless Telegraphy. These experiments took place prior to 1900, probably in late 1898 or 1899. Later, in 1900 he carried out two way experiments with H.M.S. Pioneer both in the Tamar River and along the northwest coast of Tasmania using Telefunken equipment obtained from Melbourne. There are few details available but apparently there was no two way contact along the coast. Mr. Master's signals were, however, heard when the ship was near Devonport. Some of the frame struts belonged to this experiment are being held for the Institute's Museum. They consist of copper birdcage wire netting attached to a metal cross about 3 feet across and were apparently mounted horizontally one above the other.

The Tasmanian Division of the Wireless Institute of Australia was first established in Hobart slightly before June 1923 and a branch was formed in Launceston two months later in August. There is little documented evidence of the early years of the Division, but a receipt dated 18th June 1923, has been preserved and indicates that Mr. J. C. Milne of Gretna, VK7AG, was a member at that time and that Mr. W. L. Scanlon was secretary. Probably Mr. P. W. Medhurst, VK7AH, was President and Mr. W. T. Watkins, VK7AA, the leading experimenter. In those days the Institute was regarded as being more of a nationwide association rather than a local one. Some strong dissension arose amongst some of the members and the Institute fell into disrepute. Local clubs then sprang up in the two centres - the Hobart Radio Experimenters' Club (later the Hobart Radio Research Club) in Hobart, and the Launceston Radio Experimenters' Club in Launceston.

In Hobart other active members of the H.R.E.C. were Messrs. G. W. Lawson, T. Green, W. O. Duffy, H. Lovett Dhill, C. Oldham TKA, L. R. Jensen TLA, K. Lester, F. Dowd 7GH, C. Johnson TARE, Kirby, R. D. O'May TUM, Fraser, C. Walsh 7CW, R. Baring 7HB, J. Heine 7AK, W. E. Masters 7MM, W. Bousfield, C. Harrison 7CH and many others whose names are not available.

In Launceston Mr. W. B. McCabe 7AQ was Patron of L. R. E. C. Mr. P. O. Fysh 7TF was President and Chairman. Mr. C. Scott 7CC was Secretary, and Mr. L. J. Crooks 7BQ was Treasurer. Other members were Messrs. W. Turner, R. Reynolds, E. Fernal, R. Fernal, N. Cave 7BC, H. Graham, E. Scheidrick 7ET, N. Symmonds, A. Smith 7AB, W. Scanlon 7A, G. King, A. Flounders, L. A. Hope TLA, R. S. Hope 7BS, A. S. Gill 7AS, Thompson, M. Graver, Newton, Wolfe, E. E. Cooper 7MK, Phillips, and others.

A convention of the Wireless Institute of Australia was held in Perth in August 1925 at which all States were represented. The Tasmanian delegate was Mr. P. O. Fysh 7TF who stressed on his return the need for greater participation in the Institute's affairs by Tasmania. Accordingly a meeting was held in Launceston on the 3rd of September 1925 to discuss the re-organisation of the Tasmanian Division along the lines suggested at the Convention. As a result the Tasmanian Division was re-constituted with headquarters in Launceston. The Launceston Radio Experimenters' Club continued to function for another year but it gradually faded out in favour of the Institute which was incorporated in 1925 as a company under

The Companies Act 1920. The Hobart Radio Research Club continued to flourish in Hobart although most of the transmitting members were also members of the Institute. For some reason (possibly lack of willing workers) the Headquarters were transferred suddenly to Hobart in June or July 1926. Pop Medhurst VK7AH became President, and Lon Jensen VK7LA Secretary/Treasurer. The Headquarters of the Division has remained in Hobart ever since.

The officers of the Division have changed over the years but many of the early members are still active. Presidents of the Division have been Messrs. A. H. Masters (1925), W. Judd (1926), T. K. Jebb (1927), P. O. Fysh 7TF (1928), F. W. Medhurst VK7AH (1929-30-31-32-33), W. E. Masters VK7MM (1931-32), W. T. Hooker VK7HH (1933-34), A. E. Allen VK7PA (1935 - end of war), L. R. Jensen VK7LJ (1945-49 and 1959), J. Brown VK7BJ (1950), R. D. O'May VK7OM (1961-2), L. W. Edwards VK7LE (1963-4), F. J. Evans VK7FJ (1965-6), G. Aschman VK7GA (1967), P. E. L. Dunne VK7DL (1968), T. A. Allen VK7AL (1969-70), T. Connor VK7CT (1968-9), G. D'Emden VK7ZAS (1970-1), E. J. Cruise VK7EJ (1972).

Secretaries were Messrs. P. O. Fysh 7TF (1925-7), C. Scott 7CS (1928), L. R. Jensen VK7LJ (1929), C. Harrison VK7CH (1929 - 1932), B. Baring VK7BR (1933), H. M. Moorhouse (1933 until the end of the war), J. Brown VK7BJ (1945-8), R. D. O'May VK7OM (1949-50), L. W. Edwards VK7LE (1951), F. J. Evans VK7FJ (1952-3), W. G. Tait (1954-5), M. Hurbrough VK7MH (1956), K. E. Milin VK7KA (1957-62), K. Spang VK7KS (1963-5), C. Russell-Green VK7CR (1966), E. Brand VK7BR (1967-8), I. Eadie VK7ZIE (1969-70), M. L. Conway VK7CL (1971-2).

Patrons of the Division have been Messrs. F. W. Medhurst VK7AH and L. J. Crooks, VK7BQ, who is still patron. The accompanying photo shows this grand old man of radio in Launceston.

The group photograph (taken in Dec 1973) shows six old timers all of whom are active on the air - many of them on CW. The dates show the date when first licensed.

Other old timers who are still active include R. M. Barker VK7RM (ex VK5RM 1927), R. Conrad VK7RC (1930), P. E. Nicholls VK7NY (1932), L. F. Clark VK7LC (1932), N. Campbell VK7NC (1932), C. P. Wright VK7LW (1933), D. H. Fisher VK7FB (1934), T. Connor VK7CT (1973), M. L. D. Conway VK7CL (1973), etc.

(Continued on Page 20)

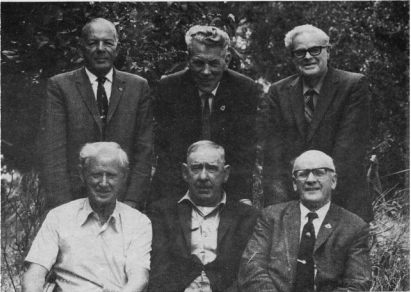
L. J. CROOKS, VK7BQ
Patron of the Tasmanian Division
First licensed in 1925.

Mr. F. W. Medhurst ("Pop"), who was later VK7AH was also experimenting with 12" "Pop" sparks in Hobart. On July 2nd 1901, Mr. Medhurst and Mr. Hallam, who were both members of the P.M.G.'s Department in Hobart were contacted by Mr. H. W. Jervoy, (father of Bill VK7ZO) at the entrance to Port Philip heads on May 9th 1901. These achievements are all the more noteworthy when it is remembered that they took place some six months before Marconi successfully spanned the Atlantic.

The Marconi Company erected stations at East Devonport, Tasmania and Queenscliff, Victoria, in 1904. The stations were opened for traffic on July 12th 1906 with the exchange of messages between the Prime Minister, Governors of the States and other dignitaries. It is probable, however, that daily contact across Bass Strait took place during experiments conducted by the engineers late in 1905.

By 1913 there were about a dozen experimenters in Launceston and Hobart who were conducting experiments with spark equipment. The outbreak of war in 1914 put an end to the experiments until about 1920. "Pop" Medhurst was still active and was assisted by Mr. W. T. Watkins ("Watty") who was given the call sign 7AA, and later still VK7DX. He was one of Tasmania's most successful experimenters in the early twenties and was the first to demonstrate telephony in Tasmania, in association with Mr. H. G. Lewis in 1923. It was about this time that groups of enthusiasts began gathering together to discuss their experiments and equipment. These gatherings led to the formation of clubs in both Hobart and Launceston.

A group of VK7 Old Timers (with dates originally licensed) — left to right — back row, C. Harrison VK7CH (1927), J. Batchler VK7JB (1932), R. D. O'May VK7OM (1923); front row, C. A. Walsh VK7CW (1926), J. C. Milne VK7AG (1921), the late L. R. Jensen VK7LJ (1925).





ABOVE: A working committee at the 1972 Federal Convention held in Melbourne, seriously ponders over matters concerning A.R. magazine.

From the left, Peter Dodd VK3CIF, Neil Penfold VK6NE, John Battrick VK3OR, Don Miller VK2GN, Keith Roget VK3YQ, and the Editor, Bill Roper VK3ARZ.

The 37th Annual Federal Convention will be held in Launceston later this month.

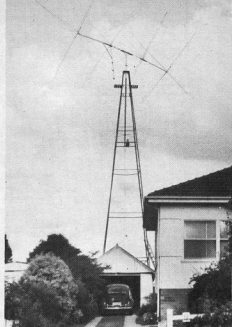
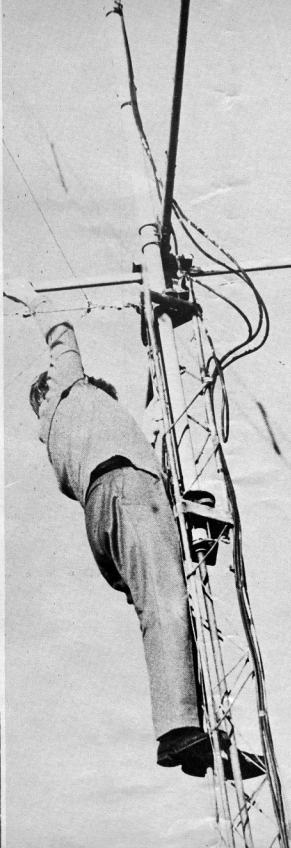


RIGHT: Just on 50 years ago the first two way contact was made across the Pacific using a wavelength of 250 metres.

This photograph by Norman Lusty, shows Max Howden, VK3BQ, sitting at the equipment he used in that historic contact.

OOPS! We nearly lost a Technical Editor.

Neither staff photographer Bob Dorin, who caught Bill in this precarious position, nor VK3ABP himself, will reveal how rescue was eventually effected.



ABOVE: Have you "built a monster?"

Does it look like the monster belonging to Syd Molen, author of the award winning article "I've Built A Monster"?

BELOW: Despite apparent photographic evidence to the contrary, Amateur Radio was not being published 338 years ago.

Interesting to note that the price, size and front cover make-up have changed many times since 1935.

AMATEUR RADIO



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PRICE 6th

OCTOBER, 1935

A Special A.R. Report THE CUSTOMS SCENE

Over a period of time many articles, studies and arguments, are produced in relation to By-Law importation; this applies to many industries as well as the efforts of Amateur Radio. The subject has not been forgotten by any means, and is still very much alive in Executive circles. Much of what is going on is known but as this By-Law Concession is not always fully understood an outline of its practical meaning and what is required to obtain it is thought might be useful.

Firstly the Import Duty as specified in the Customs Tariff is the Rate of Duty applied by Act of Parliament. Import Duties are often used to protect an Australian Industry and the employment of people in and servicing that industry. Usually a very thorough investigation is made before applying a duty but once it is imposed it is most likely to stay as a protection for the industry involved. That is the pattern of the past, - right now an investigation on Electrical Equipment is being carried out.

Obviously the Tariff in the Guide is a large volume. It is Indexed and Numerated under what is termed "Brussels Nomenclature", a standardised form of presentation understandable here and overseas.

Obviously the index could not list every detail on Australian Imports so often a general heading covers many similar items and care has been exercised over the years to make it as concise, effective, and as accurate as possible, leaving little scope for doubt on the correct Duty to be paid. Some items are listed that are free of Duty - The Tariff Guide tells you this if so applicable.

Like Radio operators the Customs Agent you may engage to help you or attend to paying

Duty on your imports holds a Customs Agents Licence for that work, he guards his reputation by avoiding errors. A double check occurs here as the Agent's Customs Entry Sheet is checked by the Customs Tariff Office when paying the Duty.

Now let us consider a hypothetically case of importing an article believing it is not of a type made in Australia but nevertheless a duty is applicable under an "all covering" item. Suppose the item is a Grand Piano - upright pianos are made in Australia and therefore a duty is applicable and the Tariff Guide makes no consideration for a different Rate of Duty on Grand Pianos which are NOT made in Australia. Here is where you think of By-Law Concession for a Duty Fee import. If the Grand is for a concert pianist of recognised fame one would believe an upright piano would scarcely be a "suitable substitute" - so this is the type of situation where the Customs Department has officers who make decisions on such an application. These decisions are listed and available for public perusal. Decisions are not made without considerable thought. If an industry is affected by these decisions difficulty is encountered because the established industry is entitled to other protection granted it by Parliament. Now do not think it is only the decision of the By-Law Office that counts in obtaining a favourable decision - the importing applicant for By-Law is required to produce documentary evidence that the equal or suitable equivalents are not available from Australian sources. (This has not always been the case).

Having read this far you will realise it is not an easy procedure to obtain a By-Law Concession

THE QUESTION OF BY-LAW IMPORTS

unless it is done in detail and with much knowledge of what is involved. If you have a genuine case you would expect it to be granted. Hansard quotes in 1 year 21817 applications for By-Law were received of which only 4445 were rejected or refused; these figures reveal the applications granted are far in excess of those refused.

Much detail has to accompany an application on the prescribed forms and these details are treated confidentially. No application is accepted if the Duty saving is less than \$100 per application.

Simplified, if by documents and correspondence you prove to the Department that there is no local manufacturer of an equivalent or suitable substitute you have every chance of favourable consideration. The evidence you submit which must be authentic to the best of your ability is the information needed. If there is anyone who can supply, and within reasonable time, that person has the right of protection which has been established by Act of Parliament.

The Institute as a corporate body expresses opinions on behalf of its members and does not engage in commerce. To those merchants or individual applicants it can lend its support and assist in requests - in fact it has done so and it still is negotiating to this end.

Advice has been received by the Institute that By-Law concessions are being granted. The details are on the lists published by the Customs and Excise Department.

If any favourable benefit from the work now being done by the Executive is made to Amateur Radio operators, you can be assured we will notify all members by the medium of A.R.

H.F. S.S.B. TRANSCEIVERS . . . by Yaesu

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Where your purchase means MORE! Like . . . pre-sales checking, personalised warranty, after-sales service, spare parts availability. Don't settle for a secondhand out-of-date set. Give yourself the best. Isn't it worth it in the long run? Remember, you only get what you pay for.

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- **FT-200 Valve Transceiver**, 80-10 metres. The time proven economical rig with features and performance in excess of its low price of \$395.
- **FP-200 AC Power Supply**, 230 volt, for FT-200. \$90.
- **DC-200 DC-DC Converter** for 12 volt DC operation of FT-200. \$135.
- New models expected this year: 6 metre and 2 metre solid state SSB Transceivers, digital readout 400w. H.F. Transceiver. Get with the strength—they are keeping up-to-date!
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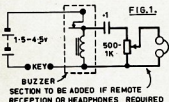
NEWCOMER'S NOTEBOOK

With Rodney Champness,* VK3UG

LEARNING MORSE CODE, Part 2b. Audio Monitor Circuits.

To complete your sending equipment you will need a buzzer and battery, or preferably an audio oscillator. The buzzer/battery combination connected as shown on the left side of figure 1, is a reasonable sending arrangement. It cannot be considered the ultimate as the buzzer takes a reasonable time to start up and stop after application and removal of voltage to it.

The buzzer system can be improved by connecting the components on the right of figure 1.



The buzzer should then be placed in a cotton wool filled box to dampen the acoustic sound of the buzzer. High impedance headphones will be the best in this circuit but low impedance ones should also be satisfactory.

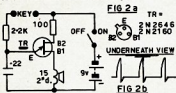
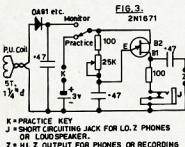
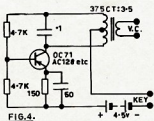


Figure 2a, shows a very simple oscillator using a unijunction transistor. If headphone reception is preferred a resistor of 15 to 22 ohms can be wired in place of the speaker and headphones can be connected across this resistor. If the level is too high a resistor in series with the phones will reduce the audio level. The value will be subject to experimentation and the impedance of the headphones used will have a large bearing on the value of this resistor. The value of the capacitor in the circuit can be altered to give the tone that suits best. This should be in the range 500 to 1500



Hz. Most CW operators use 800 to 1000 Hz. This circuit is not recommended if you want to tape record your sending. The waveform is similar to that in figure 2b, and some recorders have trouble reproducing this tone without audible unpleasant distortion.

Fig. 3, shows a similar circuit which will record better and can also be used as an on-air CW monitor. In this mode, a little RF is coupled via the pick-up coil by proximity to the transmitter tank coil and rectified. This DC is used to operate the oscillator whenever the transmitter is keyed. For phone operation simply switch to the practice oscillator position. Tone is governed by the 25K pot.



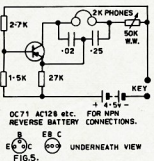
A slightly more complicated and expensive audio oscillator is shown in figure 4. This is a Hartley oscillator and its output more nearly resembles a sine wave than previous tone oscillators. The tone of this oscillator records quite well with no audible distortion. It will run quite well on voltages from 3 to 6 volts. NPN transistors can be used as long as the applied voltage and the electrolytic are reversed.

It was found that a 3.5 ohm speaker could not be placed across the 3.5 ohm winding of T1 as it loaded the oscillatory circuit too much. Speakers from about 8 ohms upwards should be satisfactory. It may depend on the particular transistor in use too. The value of R1 and R3 should be multiplied by up to 5 times in value if higher voltages than those specified are likely to be used, i.e. 12 volts. C1 and C2 can be varied to get a suitable quality sound output.

Finally in figure 5, is seen quite a novel tone oscillator. The headphones act as the inductance in this Colpitts circuit. This oscillator's waveform should also approximate that of a sine wave.

When sending or more particularly when receiving, headphones should be used to alleviate the distracting effect of room echos.

Next Month: Learning Morse Code, Part 2c. "Brass Pounding".



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Commercial Kinks

With Ron Fisher,* VK3OM

Modifications, good and bad.

After looking at numerous modifications on as many different types of equipment, I often wonder just what people have in mind when they start out. I guess that many actually start out to repair an actual fault, perhaps not even recognising that a fault exists at all. So our friend sets out to improve the sensitivity, stability or what have you when in actual fact a simple repair would have done the trick. I am often amazed at the time and effort put into improving old receivers when in many cases the owner has no appreciation of how the set should work in any case.

The number one requirement therefore is to make sure that everything is reasonably up to the manufacturer's original specifications. You might be quite surprised just how well the old set works with a few new capacitors and a general line up. If you have purchased a receiver or transceiver second-hand, try to locate someone in your area who has one of the same type and arrange to try them out side by side. Both of you might learn quite a bit.

With all this in mind, and if you are still determined to go ahead and modify old faithful then watch out on a few points.

You have of course made up your mind just what is needed, but let's say it's a better RF stage. It always seems that receiver front ends are not sensitive enough. Perhaps the other fellows have better antennas, but let's not discourage our hero so soon.

Firstly, make a close study of the original layout and wiring. The manufacturer of your set has spent a lot of time and effort to make the stage stable and effective. When you start changing components, make sure that your new wiring looks just like the original. In fact I always believe that this is the one sign of a good modification. It should be well nigh impossible to differentiate. Next thing is to write down everything you have done, including of course, the new circuit. This serves several useful purposes. One, if you are successful, make a second copy and send it off to "Commercial Kinks". Two, it will remind you just what you have done in a few years time when a better circuit comes up. And three, last but by no means least, if you sell the set, the new owner will know just what you have done. After all he might have different ideas to you. Don't forget that a well done modification with all the information included in the instruction book will definitely not reduce the resale price, but if done in a sloppy fashion with no information, then you cannot blame a prospective buyer from being a bit cautious.

If your modifications involve the use of additional controls, try to preserve the original panel lay-out as much as possible. One way to do this is to use existing control positions. For instance, the headphone socket on the Trio 9R59 receiver could be used as a mounting position for an IF gain control. The headphone socket can then easily be moved to the rear of the chassis. In the case of the original FT200 the dummy channel selector position is the ideal spot. Don't overlook the use of dual potentiometers in place of a single unit. It might be possible to combine the audio and RF controls. If it's good enough for Collins and Swan, it should be good enough for you. The Eddystone "888A". A couple of months ago, I had a few things to say about the product

detector on this receiver. Since then, I have had time to take a further look into the SSB capabilities of this receiver. After using it for a few weeks it became obvious that the AGC was not up to standard for sideband. The time constants were designed with AM reception in mind. An easy modification is to increase the value of R39 47 megohm up to 2 megohms. This will increase the decay time of the AGC to about two seconds which enables you to use a much higher setting on the RF and if gain controls with strong signals.

I also came across an odd fault in another 888A. The BFO could not be set on frequency. Even with the slug of the BFO coil right out, the frequency was too low. It was necessary to reduce the size of the BFO fixed padder C36 from its normal 200 pf to 150 pf. I can offer no explanation for this, as all components checked out OK and the IK was spot on frequency. That's all this month. Next time, some hints on repairing communication receivers. **[A]**

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NEW CALL SIGNS

OCT./NOV., 1972

A.C.T.
VK1CS—S. J. Strickler, 62 Carroll Street, Hughes, 2005.
VK1W—R. W. May, 23 Parkhill Street, Pearce, 2097.
VK1ZCG—G. A. Cohen, 72 Spofforth Street, Holt, 2261.
NEW SOUTH WALES
VK1W—W. M. Gellie, 17 Maher Street, Hurstville, 2205.
VK2SX—M. Barry-Cotter, 35 Beazley Street, Ryde, 2112.
VK2AAS—R. F. Woolley, Kings Road, Federal, 2480.
VK2IBN—C. N. Brown, 141 Rae Crescent, Koirna, 2280.
VK2JZE—W. W. Schindler, 1/11 East Crescent, McMahon's Pt., 2090.
VK2BPH—P. V. Halpin, 19 Marion Street, Wollstonecraft, 2068.
VK2BRW—R. W. Brown, 314 West Street, Crows Nest, 2065.
VK2BVA—J. L. Alcott, 1 Martin Street, Ryde, 2112.
VK2ZAT—D. D. Tilley, 6 Belmore Street, Villawood, 2163.
VK2BDC—E. J. McInnis, Coker Road, Gungahlin, 2480.
VK2BKD—K. J. Davies, 15 Russell Avenue, Winston Hills, 2133.
VK2B—C. C. Shackleton, 8 Avalon Crescent, Birming, 2143.
VK2BPO—R. Popoli, 4/121 Layfield Road, Leichhardt, 2040.
VK2BPR—H. Pearson, 6 Whitehead Street, Kincabon, 2042.
VK2BPS—P. C. B. Readley, 6 Danger Street, Lindfield, 2070.
VK2BTH—T. S. R. House, 4/11 Miller Crescent, Wollstonecraft, 2065.
VK2ZIW—A. F. Beard, 1068 Sydney Street, Willoughby, 2068.
VK2ZNYT—G. F. Hughes, 61 Hancock Street, Ryde, 2112.
VK2ZVZ—C. Zivich, 133 The Boulevard, Fairfield West 2165.
VICTORIA
VK1AW—L. J. Middleton, 3/6 Blamey Street, Ascot Vale, 3035.
VK1AIQ—J. Glenn, 1 Plunkett Avenue, Ormond, 3204.
VK1APL—J. T. Cunningham, 11 Catherine Parade, Frankston, 3199.
VK1AN—A. E. Carlyle, 22 Owens Street, Doncaster, 3108.
VK1BHL—R. C. J. Fowler, 2 Field Street, McKinnon, 3204.
VK1RHM—M. M. Deladette, 7 Cottswold Place, Warrimoo, 3182.
VK1CCJ—W. M. McCulloch, 19 Gap Road, Riddell's Creek 3631.
VK1YHG—G. R. Hedley, 15 Strathgaird Road, Rosanna, 3084.
VK1YHM—A. A. Hedley, 17 Douglas Street, Rosanna, 3084.
VK1YJZ—G. S. Eley, 11 York Street, Glen Waverley, 3150.
VK1YJM—J. M. Hodge, 312 Glenhilly Road, Elsternwick, 3185.
VK1ZAA—P. J. Pendlebury, 13 Agnus Street, Mount Albert, 3127.
VK1ZCU—R. Muir, 27 McKeeby Street, Celerine, 3315.
VK1ZMN—D. J. Manley, 22 Douglas Avenue, Swan Hill, 3585.
VK1ZMT—M. M. Bennett, 34 Ardena Road, Caulfield, 3161.
VK1VJZ—J. G. Buxton, 28 Toolevale Road, Diggers Rest, 3427.
VK1ZQ—A. P. Cheneo, 21 Prospect Street, Rosanna, 3084.
VK1ZUD—M. Wetherley, 1 Luckierie Court, East St. Kilda, 3183.
QUEENSLAND
VK1YO—T. W. Petersen, 77 Explanade, Moreton Island, Tambarine, 4720.
VK1YJ—R. J. Ford, 133 Riverside Street, Eagle Heights, 4200.
VK1ZHM—H. T. Moores, 6 Thomas Street, Winton, 4051.
SOUTH AUSTRALIA
VK1AGT—R. H. Delon, 15 Packard Street, North Plympton, 5037.
VK1CU—J. Wall, 44 Barnara Avenue, Hope Valley, 5090.
VK1STH—N. H. E. West, 20 Farmer Street, Barmen, 5045.
VK1YJL—Muller, 62 Mitchell Street, Crystal Brook, 5052.
VK1ZAB—A. R. Eatts, Bleichley, Via Strathgaird, 5052.
VK1ZAK—K. J. Gramp, 2 Elizabeth Street, Tanunda, 5152.
VK1ZAW—C. W. Matfield, 10 St. Albans Street, Toom Ranges, 5065.
VK1ZDL—K. P. Thompson, 68 Saints Road, Salisbury Park, 5109.
VK1ZEG—M. D. Clegg, 6 Reynell Street, West Croydon, 5098.
VK1ZML—M. W. Lee, 24 Berry Street, Whyalla Station, 5008.
VK1ZML—J. J. Scherer, 3 Black Top Road, Hillman, 5112.
WESTERN AUSTRALIA
VK1GT—G. B. Widnall, 120 Herbert Street, Doubleview, 6018.
VK1ZAZ—W. A. Rhodes, 13 Turnbull Way, Triggs, 6020.
VK1ZBV—J. E. McKenna, Flat 17, 56 Cape Street, Osborne Park, 6017.
VK1ZKB—B. Kelly, Flat 265, 26 Battle Street, Moornan Park, 6012.
VK1GT—Kearns Amateur Radio Club, Postal: C/- A.W.A. P.O. Box 348, Carnarvon, 6701; Station: Tracking Station, Browns Range, Carnarvon.
VK1RTV—W.A. VHF Group, Postal: 10 Hickey Street, Anson Road, 6158 Station: Channel 7 Transmitter, Biddley.
VK1RTV—Southern Electronics Group, Postal: Blue Waters, Little Green, Albany, 6133; Station: Ready Drive, Albany, 7450.
VK1ZJM—D. J. Malone, 30 Erica Street, Launceston, 7200.
VK1ZAS—R. J. Simpson, 14 Mallock Street, Somerset, 7222.

*3 Fairview Ave., Glen Waverley, Vic. 3150

VHF UHF

an expanding world

With Eric Jamieson, *VK5LP

Closing date for copy: 30th of month.
Times: E.A.S.T.

AMATEUR BAND BEACONS

VK0	52.160	VK0WI, Macquarie Island.
VK2	51.100	VK0MA, Mawson.
VK3	144.750	VK3BRTG, Vermont.
	144.920	VK3QZ, Taranaki.
VK4	52.600	VK4WJZ, Townsville.
	144.040	VK4WJL, Mt. Mowhlan.
VK5	53.000	VK5VF, Mt. Lofy.
	144.800	VK5VF, Mt. Lofy.
VK6	52.000	VK6VF (VK6RTT), Bickley.
	52.900	VK6RTS (VK6RTT), Carnarvon.
	144.500	VK6RTW, Albany.
	144.800	VK6VF (VK6RTT), Bickley.
	144.800	VK6VF (VK6RTT), Devonport.
VK7	52.200	VK7VF, Darwin.
VK8	52.200	VL3VHF, Auckland.
ZL1	145.200	ZL3VHF, Wellington.
ZL2	145.200	ZL3VHF, Palmerston North.
	431.850	ZL3VHF, Palmerston North.
	145.200	ZL3VHF, Christchurch.
ZL3	145.200	ZL3VHF, Dunedin.
JA	52.500	JA1VJ, Japan.
HL	50.100	HL9WJ, South Korea.
	50.200	
KX6	50.110	KX6GHK, Marshall Islands.
	50.100	On this frequency will be found ZK1AA, Cook Is., 3D3AA, Fiji, 3W1, West Samoa, C/ITS Easter Is.

The beacon list this month carries a number of alterations, additions and modifications, which results from information received from various sources following my request for details for inclusion of accurate beacons information in the new Call Book. I wish to thank all those who co-operated by sending information, one State only not answering, even a telegram brought no results!

The various beacons are in the course of call sign changes and where the new call sign is known this has been included alongside the old call sign. All call signs will eventually be of the three letter series commencing with R. I hope the new Call Book will include the additional information I have been supplied for, such as call outlines, operating schedule, date, power, antenna, location, etc. with the name of the custodian, should you wish to send a report of reception.

VK0 ACTIVITY

An interesting letter is to hand from Phil, VK3PF, ex VK0PF of Casey, 197/172, in which he outlines information re beacon operation in the VK0 region. Phil is QSL manager for VK0/VK0WV, and was co-ordinator of the group that built the beacon for use on Macquarie Island. I can do no better therefore, than quote the relevant parts of Phil's letter:

"The VK0/VZV beacon has not operated since mid 1972, in fact we are not on the air very much since March 1972. Tony Le Grip, the holder of the call, is now back in VK3.

The beacon at Macquarie Is. is VK0WV on 52.160 MHz. This beacon was supplied and built by the VK3 Division of the W.A.I. in record time, less than 4 weeks from go to whoat, and got on the ship with 13 minutes to spare. It was swamped coming ashore and only inspired improvisation by Ron VK0WV, made it serviceable.

The first reported reception of the beacon was on the first day it was serviceable, the night of Saturday, 9th Dec. 1972, by VK3ANP and the first ever two-way VK0 to VK0 contact was on Sunday 10th December at 1735 with VK0WV working VK2NN, 3 x 9 both ways on SSB. The opening lasted to 1835 and 28 stations in VK worked Ron, including VK2.3, 4 and 7. VK3s worked next day at 1735 to VK0WV. At the time of writing VK0G had been heard but not worked.

Phil has facilities to work transceive SSB and CW or 3225 FM, Macquarie Is. is situated at 34° south, 159° east and about 800 miles, south east of Hobart.

By the way, according to the Ionospheric Prediction Service, whose beacon it is, VK0GR Casey, has not been on the air at 52.160 since the summer of 1973.

Many thanks for the interesting information Phil, and will be pleased to hear further from you at any time. Maybe Ron VK0WV would like to fill me in with VK0 information so far in 1973.

Ron VK4ZLZ writes from Townsville with quite a lot of local news, and also mentions that at the time of writing in late February nothing of consequence had happened in the way of signals from the beacon on 6 metres. Many of the Townsville VHF boys are taking part in WICEN activities which are held on the 1st Sunday and 3rd Thursday of each month on 6 metres. On Sunday skeds start at 0830 on 40 metres and 6 metres, and on Thursdays at 1930 on 80 metres and 6 metres. Interested stations are welcome to call in. Suggest if anyone has a few spare minutes around these times to keep an ear to the ground, northern VK4 signals may well be available at times other than normal DX periods. Ron also advises that during the Jelen Moya NFD several VK5 stations were heard on 6 metres but not worked.

*Forness, S.A. 8233

Amateur Radio, April, 1973

1296 MHZ. MOONBOUNCE

On 19th February, 1973, at 2228 E.S.T. Ron VK3AKC was successful in contacting WA2NFA, on 1296 MHz E.M.E. circuit, probably representing the first such QSO on this band from the Southern Hemisphere. WA2NFA gave VK3AKC a report of 33B, and in the reverse direction WA2NFA was 550. As the contacts were separate 2 way contacts no record can be claimed for this particular effort. Skeds were arranged for 24/2 and 25/2.

Equipment at VK3AKC consisted of a horn-fed 30 foot parabolic reflector fed from a pair of 3CX100A in parallel, receiver home brew with 2 stages of RF amplification, one at the mast head, one at base. WA2NFA used a horn fed 60 foot parabolic reflector and two lots of 2CX100A in parallel, giving approx. 500 watts of 1296 MHz. 3dB cable loss reduced this to about 250 watts at the dish.

Congratulations to these two gentlemen for their efforts and we are glad to see an Australian at one end of the contact. It's rather unfortunate, but the notes are going to be short this month. Little information has arrived from other places and I have been burdened down with a seriously ill father-in-law necessitating a 56 mile round trip to the Adelaide Hospital three times a week, hence very little opportunity of being around to gather information. Hope things will improve for next issue, in the meantime the Editor can make use of the space saved!

When Phil VK3PF wrote to me re the VK0 beacons he passed on word that he liked the material for each month at the end of this column, and it seems quite a lot of others do too. Phil submits the following as a thought for this month: "Blessed are they who go round and round in little circles - For they shall be called 'Big Wheels'."

The Voice in the Hills.

AA

VHF BAND USAGE QUESTIONNAIRE

Your answers and views are required.

If you have not received a copy of the questionnaire please contact your local VHF Group or Radio Club.

Bulk supplies of questionnaires have been forwarded to each Division.

Y.R.S.

With Bob Guthrielet*

A few weeks ago I listened to a conversation between two "old timers", who swapped experiences in past days of amateur radio. They referred to UX210's for transmitting, tank coils three inches in diameter, lead and aluminium straps in saline solution for rectification. How things have changed! Now we have integrated circuits, solid state, this and that, semi-conductors, sophisticated transceivers, etc. etc.

However exciting and enlightening this may be, the fact is that the needs of youth haven't changed very much and it is that today young people have more time on their hands than before.

In January of this year I received a letter from K.J. Watson, VK2BW, Founder of the Maitland Radio Club, a portion of which I quote, "the people who give the time to keep clubs going do so because it is helping youth", and he closes with this sentence: "In my opinion the Y.R.C.S. is the greatest scheme ever to be organised."

Thanks O.M. for your letter. Communication is our business, and I would appreciate hearing from other club leaders, and especially from those amateurs who will offer a little time and know-how in the interests of those who will regard us (I hope) with affection as the "old timers" of yesterday, for it's their future we're keeping in mind.

Thank you to the State Supervisors who have extended to me the courtesy of answering my request for statistics, although my list is incomplete, and without it I must be dubbed a "schizoprene".

*Fud. Y.R.C.S. Co-ordinator, Methodist Manse, Kadina, S.A. 5554.

"20 YEARS AGO"

With Ron Fisher, VK3OM

The thoughts expressed by Geoff Taylor in QSP of February last were not new. Back in April 1953, Federal Executive told the story of the Federal Councillor in the Editorial for that month. Perhaps the concluding paragraph is worth repeating: "Get to know your Federal Councillor better - give him work to do - request information at every opportunity - in other words, let him enjoy the status his position merits - let him earn his spurs." Perhaps things haven't changed over the years at all.

Back in 1953 the component manufacturers were in the process of changing over to the preferred value system of labelling resistors, capacitors and the like. It was a bit hard to remember to ask the dealer for a 470 ohm resistor after 20 years of asking for 500 ohm resistors, however we got used to it in the end with very little trouble. An article reprinted from Wireless World told the whole story of the change over in the April 1953 issue of Amateur Radio. Other technical articles included "Carrier control with Self-biased Clamp Tube Modulator". This reprint from QST was followed by a practical example of such a modulator described by Gordon Brown VK5XU. Gordon used his type 3 mark II as the transmitter along with a 6M5 modulator driven with a carbon mike.

A B.C. Converter for the S.W. receiver. Les Duncan VK5AX showed how you could tune into Blue Hills on your ham band receiver. Perhaps a good idea when your favourite band - (amateur type) is flat.

Chris Cullinan VK7XW was at it again with his version of a Crystal Controlled Service Oscillator. This employed several crystals to give typical spots for the alignment of Broadcast receivers.

2 metres opens for VK3/VKT contacts. VK3AC's column, Fifty Meagazettes and Above, reports this as the top news for VHF operators during the preceding month. VK3ABA was contacted by VK7PF after a phone call got things under way. After this, contacts were made by VK's 3BD, 7LZ and 7GM. About the time there was quite a bit of activity on 576 MHz around the Sydney and Newcastle areas according to a report from VK2HSD.

We all complain about rising prices, but this does not always apply. William Willis & Co. made a big feature of 300 chm ribbon at 1/3d. per yard. Present day price, about 8 cents per yard. Perhaps things are not as bad as we think!

AA

It is with very great pleasure that we reproduce here a photo of Air Chief Vee-Marshall Suwondo, YB0AT, Chairman of O.R.A.R.I. the Radio Amateurs' Society in Indonesia. YB0AT, is a keen amateur and is often heard on 20m SSB. (Photo courtesy Howard Rider, VK3VJ.)



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No.	Dia. inch	Turns per inch	L'gth inch	B. & W. Equiv.	Price
1-08	1/2	8	3	No. 3002	75c
1-16	1/2	16	3	No. 3002	75c
2-08	5/8	8	3	No. 3006	88c
2-16	5/8	16	3	No. 3007	88c
3-08	3/4	8	3	No. 3010	\$1.06
3-16	3/4	16	3	No. 3011	\$1.06
4-08	1	8	3	No. 3014	\$1.19
0-16	1	16	3	No. 3015	\$1.19
5-08	1 1/4	8	4	No. 3018	\$1.32
5-16	1 1/4	16	4	No. 3019	\$1.32
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Inductance
(equivalent to B. & W. No. 3907 7 inch)
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Price \$3.30

References: A.R.R.L. Handbook, 1961;
"OST", March, 1959
"Amateur Radio", Dec. 1959.

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watts at 12.6 volts. Fantastic
Offer to Amateurs, \$9.85.

These transistors, manufactured by
"Solid State Scientific", are exactly
as currently begin used by Australia's
largest VHF mobile radio
manufacturers. They are virtually
indestructible (they withstand severe
VSWR) and are guaranteed to give
in excess of 30 watts at 144 MHz. on
12.6 volts (more at 13.8 volts!).
Supplied complete with data sheet,
test, circuit and layout diagram.

FEATURES:
● Withstand severe VSWR.
● Low inductance stripline package.
● All leads electrically isolated
from stud.

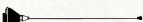
● Greater than 4.4 db. power gain.
TYPE 2N5589, \$9.85 plus 50c p. & p.

Driver Transistors Available
Complete with data sheet and suggested
circuit and layout diagram.

2N5589 (7 watts), \$6.50 p. & p. 50c
The complete set of three transistors
are available as a special package
offer for \$22.50 plus p. & 50c.

Data sheets available separately,
10c, plus 20c p. & p.

AERIALS—Mobile Radio



Strongly made "Belling Lee" Whip
Aerials for two-way radio use—as
used by N.S.W. Police Force. Complete
including cutting chart—require
3/4" hole and are designed to mount
from the top, i.e. no need to re-
move roof lining, etc.
RMW60 fibreglass 48-78 MHz., \$9.30
RMW101 fibreglass 55-85 MHz., \$7.47
RMW15 steel, steel 55-85 MHz., \$6.75
RMW21 Fib glass 144-180 MHz., \$6.80
RMW25 steel, stl 144-180 MHz., \$6.55

SPECIAL AERIALS & ACCESSORIES
RMW00L is a fibreglass hi-gain (3
db.) mobile aerial, 5/8" wavelength,
complete with initial base loading
coil, 140-180 MHz. operating range
(cutting chart supplied), \$14.35.
CB27 is a fibreglass, centrally loaded
mobile aerial for 27 MHz. mobile
operation, only 36" long, \$18.85.
K101 is a "knock down" adaptor for
all of the above aerials—aerials can
be laid flat on roof (simple screw-
in fitting), cheapest, \$5.96.
P. & p. on all aerials, 75c.

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MODEL TE15 (fully transistorised)

This versatile unit operates as a grid
dip oscillator, an absorption wave-
meter and an oscillating detector.
Six plug-in coils are supplied with
each unit covering the frequency
range 360 kHz to 240 MHz. The
unit is ruggedly constructed (full
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weight. Supplied complete with
earpiece, meter and full instruction
manual. A must for all Amateurs.

Specifications:
Transistors: 3 and 1
diode.
Meter: 500 uA, F.S.
Battery: 9 volts PP3.
Dimensions: 180 x 80 x
40 mm.
Weight: 730 g.
Frequency Range: 440
kHz to 280 MHz. with
six coils. A coil, 0.44-1.3 MHz.;
B coil, 1.34-4 MHz.; C coil, 4-14
MHz.; D coil, 14-40 MHz.; E coil,
40-140 MHz.; F coil, 120-280 MHz.

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PL259 UHF type line plug (for UHF or RG58U co-ax.)	1-9 10 up	
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Belling Lee L734/P line plug	0.45	0.40
Belling Lee L734/J line socket	0.50	0.45
Belling Lee L694/S chassis socket	0.40	0.35
Belling Lee L616 "joiner"	0.40	0.35

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equivalents much easier. Our instrument section is greatly
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high quality McMurdo and Uthlux Connectors.
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& Lee Aerials, Grid Dip Oscillators, S.W.R. Meters, Amateur information,
FETs, etc., etc. We also include a pre-paid envelope and mail order form
and can guarantee same day despatch of goods.
Yes! We still include our popular 50c vouchers.



CONTESTS

With Peter Brown,* VK4PJ

Available space limits printing comments on our contests and information on a lot of other contests so don't think that your letters go unheeded. Just keep sending them along.

At this time February, the National Field Day returns are coming in at a greater rate than the Ross Hull so I am hopeful that we have gained substantially this year in the N F D.

Three of us had an excellent few hours down by the water, under the gum trees, away from the city heat. Most VK4s seemed to go for the high spots. We seemed to hear more mobile/portable stations than for some years but the returns will tell the story. Although we heard other VK4's and VK8's stacking up the JA's we were not very successful DXwise, nor did we hear many ZLs. A pleasing feature was the number of club stations.

May I suggest December 2nd for a VHF National Field Day when conditions will be so much better for VHF. There is no reason why Divisional Field Days should not coincide.

CONTEST CALENDAR

April 1 W. A. B. LF. phone

7-8 SP. DX. CW.

8 W. A. B. LF. CW.

21-22 Bermuda phone.

28-29 P. A. C. C. DX.

28-29 WAEDC. RTTY.

May 5-6 Bermuda CW.

5-6 Helvelia 22.

12-13 USSR. CW. DX.

Federal Contests Manager, G.P.O. Box 638, Brisbane, Queensland, 4001.

NOTES ON THE ROSS HULL VHF CONTEST 1972-3
Congratulations Kerry, VK3SU on another fine win and to Mike, VK3ASQ for his excellent 48 hour score.

Bob, VK3AOT as usual put up a sterling performance and if the VK4's keep up their efforts, first Ross Hull in some cases, I can see some winners among them in the near future.

Congratulations to two entrants who obtained new call signs during the contest.

I was disappointed that we have scarcely advanced since last year, 36 logs, but better representations in the open and CW sections. ARE YOU AWARE THAT OVER 200 OPERATORS PARTICIPATED THIS YEAR?

Some operators with over 40 contacts did not return logs. What do I, or you, have to do to get logs returned?

Thanks for all the comments and suggestions which are appreciated and to which I will reply later. I am off on long service. The main thing is that so many enjoyed the contest. **A3**

*Federal Contest Manager, Box 638, G.P.O., Brisbane, Qld. 4001.

The Area Five Contest, 1973, 1st Feb. to 9th Sept. 1973. Frequency, 40 and 80 metre bands only.

Operators. Must be Area Five, fixed portable or mobile. Numbers must be exchanged, being RS or RST plus three figures starting anywhere between 000 and 999 and increasing in sequence by one per contact. On reaching 999 revert to 000. Score one point for each phone contact per day for each band, and two points when both stations are on CW.

Listeners. Any listener may enter. Must log date-time and call sign of both stations. Score as for operators.

Logs must be in the hands of the Area Officer, P.O. Box 10, Long Gungah, 2593 by the 24th Sept. 1973.

Prizes. Operators, \$15 and Certificate. Listeners, \$10 and Certificate.

Courtesy: Harry Cuthbert, VK2AEC

VK5SU DOES IT AGAIN!

ROSS HULL VHF CONTEST 1972-73 RESULTS

TROPHY WINNER
VK5SU—J. W. K. Adams
48-HOUR CERTIFICATE
VK3ASQ—M. R. Trickett

Section (a)—Transmitting Open

	7 Day	24 Hour	Contacts
VK1ZAD/JB	1032		95
2BHO	1256	356	127
3AOT	2428	1041	313
5SU	4225	1170	344
9BP	815	510	41

Section (b)—Transmitting, Phone

	7 Day	24 Hour	Contacts
VK2ZKK	1360	357	139
BMX	535	196	66
ZCT	330	114	107
HZ		161	17
ZZX	291	241	58
ZWP			52
VK3ASQ	2385	1291	240
ZAQ	1150	465	78
ANP	960	275	126
AMK	880	347	130
BDL	716	265	123
ZYP/AUQ	712	228	170
ZYO	689	296	73
KK	556	238	66
YER	196	98	50
ZIM	8	4	8
VK4ZIS	2475	740	339
ZJH	2428	755	186
ZIM	2196	—	152
ZAI	1210	—	84
ZLC	556	—	113
ZTL	112	81	26

VK5ZWW	—	675	—
VK6PD	922	—	53
ZDY	457	262	45
ZFF	336	—	24
VK7KJ	1506	555	133
AX	—	201	188
VK8ZGF	1130	465	882

Section (c)—Transmitting, CW

VK3KX	3	2	3
VK5MY	110	50	11

Section (d)—Receiving, Open

VK3/13062—M. Batt	824 pts.
L20074—J. M. Hilliard	1105 pts.

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OBITUARY

Lon Jensen, VK7LJ

It is my sad duty to inform you of the passing of my very dear friend, Lon Jensen, VK7LJ while holidaying at Bicheno on the East Coast with his wife on Saturday last, 24th March.

Lon was one of the oldest VK7 Amateurs on the air, having obtained his licence in 1925, and very active almost continuously since that time. He was a very proficient CW operator and will be remembered for his very fine fist. He was an untiring worker for the W. I. A. and will be greatly missed by his associates in Hobart, who found him always willing to help others with their problems. He was a Past President and Past Secretary of the Tasmanian Division.

Lon is survived by his wife Hilda, daughter Florence (Mrs. P. Davy) and son Robert to whom condolences are extended in their bereavement.

VK7OM

AWARDS COLUMN

With Geoff Willson,* VK3AMK

W.A.A. V.H.F.C. AWARD			
New Members:	Call	Confirmations	
Cert. No.		53 MHz. 144 MHz.	
87	VK2ZSG	107	—
(Now VK3ZAZ)			
88	VK4EZ	128	—
Amendments:			
34	VK3ZGP	211	—
44	VK3AMK	225	—
73	VK3AMK	—	133

W.I.A. 52 MHz W.A.E. AWARD			
New Members:	Call	Additional	
Cert. No.		Countries	
106	VK2ZSG	1	
(Now VK3ZAZ)			
107	VK3ZAY	1	
Amendments:			
53	VK3ZGP	4	
84	VK3AQR	3	
91	VK3KX	2	
93	VK3AOT	6	
100	VK3AMK	4	
105	VK3AMK	5	
104	VK3ANP	3	

Worked all VK Call Areas (VHF Award)

OBJECTS

- This award has been created in order to stimulate interest in sustained long distance working in the V.H.F. bands in Australia, and to give successful applicants some tangible recognition of their achievements.
- This award, to be known as the "W.A.V.K.C. (V.H.F.) Award" will be issued to any Amateur who satisfies the following conditions:
- Certificates of the Award will be issued to the applicants who show proof of having made contacts with Australian Amateur Stations in the areas shown in the attached Appendix. The number of contacts required in each area is also shown.

REQUIREMENTS

- Contacts must be made in the V.H.F. Band (Band 5) which extends from 30 to 300 MHz, but such contacts must only be made in the authorized Amateur bands in Band 5.
- Verifications are required from all of the call areas in accordance with the details given in the Appendix. A total of 22 confirmations will be required.
- The closing date for the Award is 31 January, 1968. All contacts must be made on or after this date may be included.

Federal Awards Manager, C.P. Box 186, Toomb, 2142.

Direct Subscriptions

- Why not take out a direct subscription to "A.R." for overseas friends?
- Why not encourage overseas contacts to take out a direct subscription to "A.R."?
- How about checking your local Libraries, Technical Institutions and Schools if they want "A.R." on direct subscription?

Cost is only \$4.80 per annum
(Air Mail is \$1.60 extra-VK3)

Sorry: "A.R." is not available on direct subscription to individuals resident in VK.

OPERATION

- All contacts must be two-way contacts in the same band and cross-band contacts will not be allowed.
- Contacts may be made using any authorized type of emission for the band concerned.
- Fixed stations may contact land portable/land mobile stations and vice versa, but land portable/land mobile station applicants must make their contacts from within the same call area.
- Applicants, when operating either land portable/land mobile or fixed, may contact the same station license but must not include both contacts in the one application.
- Contacts made with ship or aircraft stations or contacts made with the aid of repeaters or translations of any kind will not be allowed.
- Applicants may only count one contact for a station worked as a Limited Licensee with a Y or Z three-letter call sign, which is subsequently contained in a full A.O.C.P. holder.
- All stations must be contacted from the same call area by the applicant (except as below), although if the applicant's call sign is subsequently changed, contacts will be allowed under the new call sign providing the applicant is still in the same call area. If the applicant moves to another call area, contacts must be made from within a radius of 100 miles of the previous location to qualify toward points. If the distance of the new location from the old exceeds a radius of 100 miles, a separate application for a new award must be made claiming only contacts made from the new location.
- All contacts must be made when operating in accordance with the Regulations laid down in the "Handbook for the Guidance of Operators of Amateur Wireless Stations" or its successor.

VERIFICATIONS

- It will be necessary for the applicant to produce verifications in the form of QSL cards or other written evidence showing that two-way contacts have taken place.
- Each verification submitted must be exactly as received from the station contacted, and altered or forged verifications will be grounds for disqualification of the applicant.
- Each verification submitted must show the date and time of contact, type of emission and frequency band used, the report and the location or address of the station at the time of contact.
- A check list must accompany every application setting out the following details:
 - Applicant's name and call sign and whether a member of the W.I.A. or not.
 - Band for which application is made.
 - Where applicable, the date of change of call sign(s) and previous call sign(s).
 - Details of each contact as required by Rule 4.3.
 - The applicant's location at the time of each contact if land portable/land mobile operation is claimed.
 - Any relevant details of any contact about which some doubt might exist.

APPLICATIONS

- Applications for membership shall be addressed to the Federal Awards Manager, W.I.A., P.O. Box 186, Toomb, Vic. 3142, accompanied by the verifications and check list with sufficient postage enclosed for their return to the applicant, registration being included if desired.
- A nominal charge of \$1.00, which shall also be forwarded with the application, will be made for the issue of the certificate to successful applicants who are non-members of the Wireless Institute of Australia.
- Successful applicants will be listed periodically in "Amateur Radio".
- In the event of a dispute, the decision of the Federal Awards Manager and two officers of the Federal Executive of the W.I.A. in the interpretation and application of these Rules shall be final and binding.
- Notwithstanding anything to the contrary in these Rules, the Federal Council of the W.I.A. reserves the right to amend them when necessary.

APPENDIX

TERRITORY	CALL AREA	QSL's REQUIRED
(Australian Antarctic)		
(Heard Island)	VK3	1
(Macquarie Island)		
(Australian Capital Territory)	VK1	1
(East Howe Island)		
(State of New South Wales)	VK2	2
(State of Victoria)	VK3	2
(State of Queensland)		
(Thursday Island)	VK4	3
(Tasmania)		
(State of South Australia)	VK5	3
(State of Western Australia)	VK6	3
(Fanning Island)		
(King Island)	VK7	3
(State of Tasmania)		
(Northern Territory)	VK8	1
(Admiralty Islands)		
(Bougainville Island)		
(Christmas Island)		
(Cocos Island)		
(New Guinea)	VK9	1
(New Ireland)		
(Noumea Island)		
(Papua)		

NOTE:

In Areas above, where more than one confirmation is required, contact may be made with any or all of the Territories listed in brackets.

SINGAPORE AMATEUR RADIO TRANSMITTING SOCIETY

P.O. Box 5728 SINGAPORE

The following Award Certificates are offered by the Singapore Amateur Radio Transmitting Society to Radio Amateurs and SWLs throughout the World who fulfil the requirements for these Awards.

LION CITY AWARD

Requirements: (a) Radio Amateurs in Zone 28 must work forty different 9V1 Amateur Radio Stations in Singapore.

(b) Radio Amateurs in the rest of the World must work twenty different 9V1 Amateur Radio Stations in Singapore.

PEARL OF THE ORIENT AWARD

Requirements: Radio Amateurs must contact at least five Singapore Stations on each Band — 10, 15, 20, 40 and 80-metre band, making total of twenty-five contacts.

Contacts can be made on any mode—phone, cw or mixed, with minimum reports of RS 31 or RST 338. Contacts from and including 10th September, 1968 only will count. A copy of the Log Extract showing the Date, Time (GMT), Frequency, Mode and Signal Reports of the Stations worked and Verified by two Licenced Operators, or two Licensed Radio Amateurs together with ten IRCs or US \$1 should be submitted with the application.

Short Wave Listeners may also apply for these Awards. Their reports must be certified by the QSL cards received from the Singapore Stations heard. A list showing the Date, Time (GMT), Frequency, Mode, and Signal Reports of the Stations heard and verified by an official of a local Amateur Radio Club or Society, or two Licensed Radio Amateurs together with ten IRCs or US \$1 should be submitted with the application. Only Singapore Stations heard on and after 10th September 1968 will count. For the Lion City Award SWLs need only report on twenty Stations.

A 30-40 MHz. Frequency Counter

(Continued from Page 6)

The three critical TTL devices are:—

- The input selector switch. A 74H00 is recommended if this switch is used.
- The signal gate. Again a 74H00 is recommended.
- The 7490 on the first (digits) indicator decade.

All the National devices tried by the writer have operated in excess of 30 MHz. By selection from a batch of 20 being used elsewhere one was found which operated at 52 MHz. An attempt will be made to pre-select these "good" ones if there is a wide demand.

AVAILABILITY OF PARTS

So much interest has been shown during the development of this counter that arrangements have been made to make all parts (including transformer, drilled and plated p.c.b., fully drilled cabinet and metalwork, and full instructions) through the components section of the VK3 Division. Their address is P.O. Box 65, Mt. Waverley, Victoria. Any enquiries on supply of parts should be sent to them.

Any correspondence on other than supply matters should be addressed to the writer.

ACKNOWLEDGMENTS

This article could not be concluded without expressing the writer's gratitude to John Boyce, VK3AXP, for his patience in explaining the mysteries of digital electronics and for working out the control circuitry.

The transformation of the circuits into operating hardware could not have taken place without the unflinching help and check facilities extended by Jack Gillham, VK3DGE, during the writer's long stay in Sydney.

Magazine Index

With Syd Clark, VK3ASC

"QV"

September, 1972: Slow Scanning Colour; SSTV: Electrostatic Deflection CR Tubes; CQ Reviews: The Yaesu Model FTd3570 SSB/CW Transceiver; It's Better to Receive; Relativity and the Slightly Used Unmarked Supply IC's; An External VFO for the Heathkit SB-102 Transceiver; Voltage Independent Ramp Generator; Considerations for Solid State Linear VFO's.

"QST"

November, 1972: Some tips on Successful QRP Operation; Antenna Traps of Spiral Delay Line; Fundamentals of Solid-State Power-Amplifier Design; Part 3: The PVTG Box, (RTTY A.F. Spectrum Analyser); The Mini-Gallon; Save the Ham-M; A Morse-Code Time Identifier; A Code Practice Oscillator for the Beginner; The Y Match; A Repeater Identifier; Review of the Ten-Tec Argonaut 505.

"RADIO COMMUNICATION"

September 1972 (Review copy supplied 16.11.72): Thoughts on a Multi-Mode Transmitter for Four Metres; Aerials and Rotation Systems; Part 2: Simple no-cost Curve Tracer; Superzine Aerials; Consumer Integrated Circuits in Amateur Design; October, 1972: Consumer Integrated Circuits in Amateur Design; P.L. Audio Power: An Audio Filter; The Puffmaster; Using the SL400 Series Integrated Circuits in Transceivers; Part 1.

"POCKET PORTABLE PHONE DX"

September 1972: Using the Plessey SL400 Series Integrated Circuits in Transceivers; Part 2: Practical Bread Breakers Using Stock Materials; Cords, Capacitors and Bandspread.

"SHORT WAVE MAGAZINE"

September 1972: 2L-Special Compressed for Ten Metres; Low Voltage P.T. Straight RT Amplifier for Seventymetres; October 1972: Looking at the Yaesu Model FT-DX-401 and FT-DX-560 Transceivers (Test Report); VFO for Two Metres; Frequency Modulation; About Diode Product Detectors.

"73 MAGAZINE"

September 1972: Construction of a Plessey SSTV Camera; WVVW 60 KHz. Frequency Computer Receiver; Cigar Tube Q Audio-R.F. Signal Generator; The C.W. Excavator; Antennas and Test Receivers for 1296, 2300 and 3500 MHz; Balun Up or Balun Down? Another Solid State Power Supply Article; IC Six Metre Receiver; A Tracking FM-AM Demodulator Using an IC; Active Filter Design and Use; Part 3: A Modern VHF Frequency Counter; Frequency Synthesizer for 2M Ft. Part 1.

"BREAK-IN"

November 1972: A Forty Foot Tall Over Tower; Transistor Keying Circuit for Credit Telegraphy; A Simple Two-Metre Preamp; Fire Protection in the Ham Shack; The Q.R.M. Diminisher Mk 3-45; How Much is Your Hobby Worth?

TECHNICAL ARTICLES

Readers are requested to submit articles for publication in "A.R." in particular constructional articles, photographs of stations and gear, together with articles suitable for beginners, are required.

A.R. Direct Subscriptions:

The Air Mail extra amount of \$1.60 per annum given in the Advertisements on Page 23 of September, A.R. and subsequent issues refers to Air Mail to VK9. Air Mails elsewhere overseas vary in rate from 90 cents per copy downwards.

The W.I.A. still processes overseas magazines subscriptions. The rates are shown on Page 18

Send for lists to: W.I.A., P.O. Box 150, Toorak, Vic., 3142, or from you Division.

HAMADS

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Complete transmitting station in rack 80-10m 6+2m at 60W AM VFO on all bands. Includes power supplies, modulator, relays, and all transmitters. What offers, J. S. Bland VK4JJB, 20 Heyson St., Weston, A.C.T. 2611. Ph. Bks. (062) 45 8911 x 25, Home (062) 88 2863.

3 Section commercial 1000ft. galvanised tower, complete external galvanised ladder and platform, all guys, etc. \$125. VK3BCL QTHR. Ph. (03) 4-4246.

Coaxial Cable equivalent PT11M PT20M double screen bursible PVS 30c and 30c yard VK4WR. P.O. Box 279, Nambour, 4590.

Sangamo Electric Time Clock. Hardly used. \$11.00 incl. postage. VK2AAY, P.O. Box C184, Clarence St., Sydney.

Yaesu Type "F" solid band exciter, never used. \$35. VK3ZTA, D. J. Laidlaw, 2 Simon Ck., Mulgrave, 3170.

Trio 9R-59D Comm. Rx. Good order. \$120. Offers wanted Heath Monitor Scope, Morse Key PMG type: Bob Gutberlet, Hay St., Kardinia, 5054, Ph. 21 0885.

Collins 75A2R's, double conversion, 80/40/20/15/11/10 Mx bands, AM and CW; superb Rx in excellent cond. \$195. Heathkit HW17A transceiver 143-148 MHz AM/FM, Ibw out, as new cond., includes DC mobile PSU \$185. G. Scott, VK3ZIP, 30 Mitchell Rd., Mount Albert Nth., 3127. Ph. (03) 89 4645.

HAVQ Ant. 340. Honda 800 Watt 230v AC. Generator in new condition. \$195. VK3ZT QTHR. Ph. (03) 88 2867.

Collins Rx 7583. Mist condition, used in standby Rx only. \$385. VK1BH, Ph. (062) 54 1069 or QTHR.

Galaxy III transceiver, excellent condition, mech. and elec. with VOX and AC PS/speaker unit. \$280. Andrew Davis VK4DA, (062) 63 3039 Bx. Hours, 32 Kalgoorlie Cr., Fisher, A.C.T. 2611.

WANTED

ARRS Receiver in working order. VK3ALZ QTHR. Ph. (062) 4741 698.

Viking II Transmitter AM. Not necessary to be working—but intact. No fancy prices. VK4LN QTHR. Ph. (071) 82 2675.

Vertical movement type "Bug" key. Commercial or homebrew. Partics. to A. Shewsmith, VK8AS QTHR. Ph. (072) 44 6526.

Tasmania celebrates its GOLDEN JUBILEE

(Continued from Page 9)

A number of members of the Division have been made Life Members for meritorious work in the Institute. These are Messrs. F. W. Medhurst VK7AH (1925), P. O. Fysh VK7FP (1929), W. T. W. Watkins VK7DX (1930), G. Harrison VK7CH (1934), J. Brown VK7BJ (1948), L. E. Cooke VK7BG (1950), L. R. Jensen VK7BL (1953), P. J. Dunne VK7PD (1955), R. D. O'May VK7OM (1956), T. Connor VK7CT (1968), T. A. Allen VK7TA (1969).

Members of the Institute in Tasmania have undertaken many outstanding acts of community service. Among these are the maintaining of emergency communications both intrastate and interstate following interruptions caused by floods and cable failures, provision of communication facilities at Regattas in the north and south of the state, etc. In the years up to the beginning of World War II, the Tasmanian amateurs provided many broadcast programmes on medium waves for the benefit of listeners all over the island. Among these were VK7CS, VK7BG and VK7JR in Launceston, VK7RS, VK7CW, VK7PA, VK7LA, and VK7CH in Hobart, VK7JL and VK7BC in Burnie, VK7DR in Devonport and VK7JW in Longford.

Anniversary celebrations will be held in Hobart and Launceston to mark the occasion, and the Federal Convention of the W. A. will be held in Launceston this year. Also a "VK7 Golden Jubilee Award" has been organised for stations all over the world contacting Tasmanian amateurs.

SILENT KEYS

It is with deep regret that we record the passing of the following: VK2RE—R. W. Edwards VK2AQX—R. Grivas VK2BWS—M. W. J. Sheldon L30176—C. J. Prior VK4PK—S. J. McIntosh L40105—L. G. Willett Sr. VK5HY—A. A. Cotton L60141—J. Dittman VK7LJ—L. R. Jensen

QSP

(continued from Page 2)

TV STANDARDS.

The South African Group of 23rd February quotes two directors of a West German electronics company on stating that nowhere else in the world did manufacturers of TV sets face tolerances of the stringency required by the South African Bureau of Standards. "Now, Africa is the only country, to our knowledge, which has compulsory specifications laid down for the manufacture of TV sets." As that country does not yet have a TV service perhaps the 25 amateurs might be spared much of the interference problems we have.

VU-LAND 80 mX BAND.

"The Indian Radio Amateur" of Oct '72 announces that their Ministry has allotted 3850-3700 KHz to VU Grade 1 amateurs in addition to their existing 80 mX allocation of 3850-390 KHz.

MAIL DELAYS.

Some publications posted in the U.S.A. on 8th November arrived on 16th February.

RECEIPTS.

"Why do I not get a receipt when I pay my subscription to the Executive Office?" is a common complaint. The short answer is that receipts are not issued unless requested. This is in line with modern commercial practice. The other reason is that if a receipt had to be issued for every payment the Executive Office would be overwhelmed with mail and most of all, the staff are in very short supply indeed.

TOWER FOR A BEAM.

VK3BIBT's picture out of the American Telephone Engineer & Management which describes the TV tower can't be put in the N.E. corner. This little monster weighs 4,000 tons and is 333 metres high which is near enough to 174 feet. An intriguing detail is that the foundations are only 11 feet deep on a diameter of 230 feet. Could be a useful sky-hook for a repeater or maybe some mobile work from the restaurant at the 116 foot level.

ITU PREFIX BLOCKS.

In the ITU latest listings Australia has the blocks AXA-AXZ, VHA-VNZ and VZA-VZZ.

AR POSTINGS

"I am not sure if A.R. comes from Melbourne or the VK5 Division" writes a member in N.T. Yes. VY is posted in Melbourne. "Chatterbox" to be exact—in bulk bundles sorted strictly in Post code order as required by the P.M.G. Dept. A.R.'s for the more distant states are posted first. Each month's posting of A.R. weighs about 700 lbs. and the postage bill is seldom less than \$170.

Photograph of Thuj Yonsten, AS17Y with Karl Koziak VK2BK4M on his right and Syd Molloy VK2SG on his left. Thuj is in Sydney for some 10 months to study English before returning to Bhutan, and is staying in the North Sydney area, but can be contacted through VK2SC. Whilst he is away, Bhutan will be kept on the map by AS17N. (Material by courtesy VK2SG).

BOOKS OF INTEREST FOR AMATEUR OPERATORS

- DANISH—WORLD RADIO & TV HANDBOOK\$5.95
- R.S.G.B.—AMATEUR RADIO TECHNIQUES, 4th Edition\$6.05
- R.C.A.—SILICON CONTROLLED RECTIFIER, Experimenter's Manual\$1.50
- DANISH—HOW TO LISTEN TO THE WORLD, 7th Edition\$4.00
- SAMS—HOW TO READ SCHEMATIC DIAGRAMS\$4.30
- NOLL—SOLID STATE Q.R.P. PROJECTS\$5.15
- R.C.A.—LINEAR INTEGRATED CIRCUITS\$3.75
- NOLL—73 VERTICAL, BEAM, AND TRIANGLE ANTENNAS\$6.95
- G.E.—ELECTRONIC EXPERIMENTERS CIRCUIT MANUAL\$4.00
- A.R.R.L.—UNDERSTANDING AMATEUR RADIO\$4.35
- SAUNDERS—99 WAYS TO USE YOUR OSCILLOSCOPE\$6.15

Add Postages: Local 35 cents, Interstate 65 cents

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Phones 60-1475-6-7



ACITRON TRANSMITTER TEST SET

Functions Incorporated Are:

Power level checks, Standing wave ratio, Antenna selection, Two tone oscillator and a 50 Ohm load with Overload protector.

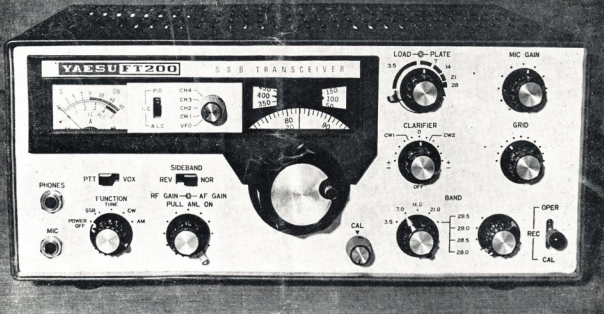
Brief Specifications

- * 500 Watts Peak Power
- * SWR to 5:1
- * Two Tone approx. 1500-900 Hz
- * Dummy Load 50 Ohms
- * Tone Level out 3V P-P.

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FT-200 FIVE-BAND TRANSCEIVER

A superb quality, low cost, versatile transceiver. Covers 80-10 mx, tuning range 500 Kc. each band. On 10 mx, crystal supplied for 28.5-29 Mc. (Crystals available optional extra for full 10 mx coverage.) SSB, CW, AM; with a speech peak input of 300w. Transistorised VFO, voltage regulator, and calibrator. 16 valves, 12 diodes, 6 transistors. PA two 6JS6A pentodes. ALC, AGC, ANL, PTT and VOX. Calibrated metering for PA cathode current, relative power output, and receiver S units. Offset tuning ± 5 Kc. Uses a 9 Mc. crystal filter with bandwidth of 2.3 Kc. at -6 db. Selectable sidebands, carrier suppression better than -40 db. Sideband suppression better than -50 db.

Provision for use of optional external VFO, FV-200. VFO includes fixed channel facility.

Operates from conservatively rated separate 230 volt 50 c.p.s. AC power supply, FP-200, which includes built-in speaker. A 12 volt DC power supply, DC-200, is also available. Transceiver incorporates power take-off and low level R.F. drive outlets suitable for transverters.

Latest model includes (1) provision for use of external VFO FV-200, and (2) factory installed key-click filter.

Cabinet finished in communication grey lacquer. Panel, etched, satin finish aluminium.

FT-200 Transceiver ..	.....	\$395
FP-200 AC Power Supply ..	.....	\$90
DC-200 DC Power Supply ..	.....	\$135
FV-200 External VFO ..	.....	\$115
M-200 Mobile Mount ..	.....	\$14

NOTE: Early model FT-200 owners, basic kit of parts available to enable modification for ext. VFO facility

Prices include S.T. Freight is extra. Prices and specs. subject to change.

All sets checked before despatch. After sales service, spares availability, warranty. All Yaesu sets sold by us are complete with plugs, power cables, English language instruction manuals, and three-core AC cable and 3-pin plug installed where applicable.

Sole Australian Agent:

BAIL ELECTRONIC SERVICES

60 Shannon St., Box Hill North,
Vic., 3129. Phone 89-2213

N.S.W. Rep.: **STEPHEN KUHLE**, P.O. Box 56, Mascot, N.S.W., 2020. Telephone: Day 667-1650 (AH 371-5445)
South Aust. Rep.: **FARMERS RADIO PTY. LTD.**, 257 Angas St., Adelaide, S.A., 5000. Telephone 23-1268
Western Aust. Rep.: **H. R. PRIDE**, 26 Lockhart Street, Como, W.A., 6152. Telephone 60-4379